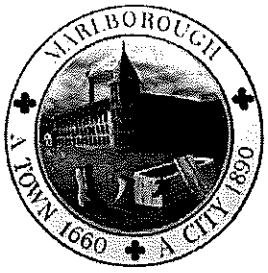

2021
INDUSTRIAL PRETREATMENT PROGRAM ANNUAL REPORT

City of Marlborough, MA
MA0100480

July 21, 2021

Mr. Justin Pimpare
Regional Pretreatment Coordinator
EPA New England
5 Post Office Square
Suite 100 OEP 06-03
Boston, MA 02109

John F. Murphy
Marlborough Water and Sewer Department
135 Neil St.
Marlborough, MA

Dear Mr. Pimpare;

This Annual Report covers the time of July 1, 2020 through July 31, 2021.

(1) See Attachment labeled "Significant Industrial Users".

(2) **Industrial inspections** were performed on eleven (11) Significant Industrial Users.

API Technologies (3/8/21), **Dav-Tech Plating, Inc.** (3/29/21), **Diamond Machine Technology, Inc.** (5/13/21), **Gotham Ink Corp.** (4/12/21), **Ken's Foods, Inc.** (3/15/21), **Ktron, Inc.** (3/18/21), **Massachusetts Water Resources Authority** (4/16/21), **Quest Diagnostics** (3/25/21), **Rohm & Hass Chemical,** (3/11/21), **Ruland Mfg. Co.** (4/5/21), **Saint-Gobain High Performance Materials** (4/8/21),

Significant Industrial Users that were sampled during this period:

API Technologies (3/8/21), **Dav-Tech Plating, Inc.** (3/29/21), **Ken's Foods, Inc.** (3/15/21), **Ktron, Inc.** (3/18/21),**Massachusetts Water Resourses Authority** (4/16/21), **Quest Diagnostics** (3/25/21), **Rohm & Hass Chemical,** (3/11/21), **Ruland Mfg. Co.** (4/5/21), **Saint-Gobain High Performance Materials** (4/8/21),

- **Diamond Machine Technology, Inc.** and **Gotham Ink Corp**. are not sampled, as they have zero discharge industrial permits. The zero discharge was verified during the facility inspections.

Verbal notifications:

(3) All Significant Industrial Users currently have a valid Industrial Wastewater Discharge Permit issued by the City of Marlborough.

John F. Murphy is the City of Marlborough's Industrial Pretreatment and FOG Coordinator hired in February of 2021. The laboratory staff consists of Chemist Alaina Davis and Assistant Chemist Andrew Burke. This year's scheduling, sampling and inspections of industrial users was carried out by John Murphy and Andrew Burke.

(4) **See Attachments:** "Current Local Limits", "Town of Northborough Influent to the West Plant", "Bioassay Summaries", "West Plant Influent and Effluent Analyses", "West Plant Sludge Analyses", and "Significant Industrial Users".

(5) The Westerly Wastewater Treatment Plant did not experience interference or pass through during this pretreatment period.

(6) The City continues to use a camera to investigate and correct I/I throughout the sewer system.

(7) We continue to have a very good working relationship with all industrial users permitted by the City. They are all aware of the importance of meeting their permit requirements and have been very cooperative with our staff.

If you or your staff has any questions, please call me at (508)-624-6910, ext 33405.

Respectfully,

John F. Murphy
IPP/FOG Coordinator
City of Marlborough DPW
jmurphy@marlborough-ma.gov

CC: Sean Divoll, DPW Commissioner
Christopher LaFreniere, Assistant Commissioner - Utilities
Mass. DEP, Bureau of Waste Prevention

EPA Region 1 Annual Pretreatment Report Summary Sheet

POTW Name: Marlborough West WWTP

NPDES Permit #: MA0100480

Pretreatment Report Start Date: July 1, 2020

Pretreatment Report End Date: July 31, 2021

# of Significant Industrial Users (SIUs):	11	
# of SIUs Without Control Mechanisms:	0	
# of SIUs not Inspected:	0	
# of SIUs not Sampled:	2	0 Discharge
# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:	0	
# of SIUs in SNC with Reporting Requirements:	0	
# of SIUs in SNC with Pretreatment Compliance Schedule:	0	
# of SIUs in SNC Published in Newspaper:	0	
# of SIUs with Compliance Schedules:	0	
# of Violation Notices Issued to SIUs:	0	
# of Administrative Orders Issued to SIUs:	0	
# of Civil Suits Filed Against SIUs:	0	
# of Criminal Suits Filed Against SIUs:	0	
# of Categorical Industrial Users (CIUs):	0	
# of CIUs in SNC:	0	

PENALTIES

Total Dollar Amount of Penalties Collected: 0

# of IUs from which Penalties have been Collected: 0

LOCAL LIMITS

Date of Most Recent Technical Evaluation of Local Limits: June 2004

Date of Most Recent Adoption of Technically Based Local Limits: May 11, 2007

Pollutant	Limit (mg/l)	MAHL (lb/day)

See Table #9 "Maximum allowable head works loading for pollutants of concern" taken from CDM June 2004. "Local Industrial Discharge Limits Report Draft" which was accepted by the EPA and adopted by the City Council of Marlborough on May 11, 2007.

Current Local Limits

Table 1
Daily Industrial Limits

Parameter	Units	Daily Maximum Limits	Sample Type
Aluminum	mg/l	NLS	C
Ammonia, nitrogen	mg/l	50	C
Antimony	mg/l	NLS	C
Arsenic	mg/l	0.42	C
Beryllium	mg/l	0.12	C
BOD5	mg/l	350	C
Cadmium	mg/l	0.1	C
Chromium	mg/l	0.77	C
COD	mg/l	NLS	C
Copper	mg/l	0.3	C
Cyanide	mg/l	0.45	G
Flow, Process**	gpd		D
Flow, Total	gpd		C
Lead	mg/l	0.1	C
Mercury	mg/l	0.0007	C
Nickel	mg/l	0.6	C
Oil and Grease	mg/l	100	G
pH	SU	6.0-10.5	D
Phenol	mg/l	NLS	G
Selenium	mg/l	0.81	C
Silver	mg/l	0.25	C
Thallium	mg/l	0.93	C
Total Phosphorus	mg/l	25	C
Total Toxic Organics*	mg/l	2.13	G/C
TSS	mg/l	350	C
Zinc	mg/l	3.7	C
All Parameters will be tested at the **Most Stringent Limit**			
*TTO will be sampled as CFR 40-433.11 with 624 as a grab sample and the 625 and 608 as a composite sample.			
*All TTO Parameters above 0.01 mg/L shall be added toward the 2.31 Daily Maximium Limit.			
**Measured at Outfall			
Abbreviations: C = Composite, G = Grab, D = Daily, NLS = No Limit Set, M= Monthly, Q= Quarterly, S= Semiannual, Y=Yearly (Annually)			

Town of Northborough
Influent to the West Plant

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1F0954

Northborough Water Department

Tim Davison
63 Main Street
Northborough, MA 01532

Project Name: Water/Sewer Department

Project / PO Number: Water/Sewer Department
Received: 06/09/2021
Reported: 06/30/2021

Case Narrative

Per the subcontract lab: "Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Analytical Testing Parameters

Client Sample ID:	Hudson ST Wastewater Pump Station		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1F0954-01	**Collection Date:**	06/09/2021

Analyses Performed by: Microbac Laboratories, Inc. - Dayville

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 350.1, Rv. 2 (1993)								
Ammonia as N	**32.0**	1.00	mg/L	20		06/14/21 1107	06/14/21 1448	CLW
EPA 365.1, Rv. 2 (1993)			**Method Notes:** D1					
Phosphorus - Total as P	**7.79**	0.0850	mg/L	2		06/09/21 1900	06/10/21 1125	CLW
Hach 8000								
Chemical Oxygen Demand (COD)	**898**	5.00	mg/L	1		06/14/21 1330	06/14/21 1530	DJM
SM 2540 D-2011								
Total Suspended Solids (TSS)	**68.0**	25.0	mg/L	10		06/10/21 2050	06/11/21 1600	TJT
SM 5210 B-2011								
Biochemical Oxygen Demand (BOD5)	**164**	120	mg/L	60		06/09/21 2021	06/14/21 1428	AKS

Metals Total by CVAA	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 245.2								
Mercury	<0.00020	0.00020	mg/L	1		06/15/21 1208	06/15/21 1439	MMC

Metals Total by ICP	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rv. 4.4 (1994)								
Aluminum	**0.831**	0.0500	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Antimony	<0.0030	0.0030	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Arsenic	<0.0050	0.0050	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Beryllium	<0.0010	0.0010	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Cadmium	<0.0020	0.0020	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Chromium	**0.0050**	0.0020	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Copper	**0.154**	0.0020	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Lead	**0.0075**	0.0030	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Nickel	**0.0051**	0.0050	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Selenium	<0.0050	0.0050	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Silver	<0.0020	0.0020	mg/L	1		06/10/21 1049	06/26/21 0238	JDF
Thallium	<0.0050	0.0050	mg/L	1		06/10/21 1049	06/15/21 1815	DLO
Zinc	**0.327**	0.0050	mg/L	1		06/10/21 1049	06/15/21 1815	DLO

CERTIFICATE OF ANALYSIS

D1F0954

Client Sample ID:	Hudson ST Wastewater Pump Station		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1F0954-01	**Collection Date:**	06/09/2021

Analyses Performed by: Phoenix Environmental Labs

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 625.1								
Acenaphthene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Acenaphthylene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Anthracene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
1,2-Diphenylhydrazine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzidine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzo[a]anthracene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzo[a]pyrene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzo[b]fluoranthene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzo[g,h,i]perylene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Benzo[k]fluoranthene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
4-Bromophenyl phenyl ether	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Butyl benzyl phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
4-Chloro-3-methylphenol	170	48	ug/L	10		06/11/21 0000	06/14/21 0000	
bis(2-Chloroethoxy)methane	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
bis(2-Chloroethyl) ether	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2-Chloronaphthalene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2-Chlorophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
4-Chlorophenyl phenylether	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Chrysene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Dibenz(a,h) anthracene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Di-n-butyl phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
3,3-Dichlorobenzidine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,4-Dichlorophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Diethyl phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,4-Dimethylphenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Dimethyl phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,4-Dinitrophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,4-Dinitrotoluene (2,4-DNT)	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,6-Dinitrotoluene (2,6-DNT)	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Di-n-octyl phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
bis(2-Ethylhexyl)phthalate	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Fluoranthene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Fluorene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Hexachlorobenzene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Hexachlorobutadiene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Hexachlorocyclopentadiene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Hexachloroethane	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Indeno(1,2,3-cd) pyrene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Isophorone	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2-Methyl-4,6-dinitrophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Naphthalene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	

CERTIFICATE OF ANALYSIS

D1F0954

Client Sample ID:	Hudson ST Wastewater Pump Station		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1F0954-01	**Collection Date:**	06/09/2021

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Nitrobenzene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2-Nitrophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
4-Nitrophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
n-Nitrosodimethylamine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
n-Nitrosodiphenylamine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
n-Nitrosodi-n-propylamine	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,2'-Oxybis(1-Chloropropane)	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Pentachlorophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Phenanthrene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Phenol	45J	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Pyrene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
1,2,4-Trichlorobenzene	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
2,4,6-Trichlorophenol	<48	48	ug/L	10		06/11/21 0000	06/14/21 0000	
Surrogate: 2-Fluorobiphenyl	Dil out	Limit: 30-130	% Rec	10		06/11/21 0000	06/14/21 0000	
Surrogate: 2-Fluorophenol	Dil out	Limit: 10-130	% Rec	10		06/11/21 0000	06/14/21 0000	
Surrogate: Nitrobenzene-d5	Dil out	Limit: 15-130	% Rec	10		06/11/21 0000	06/14/21 0000	
Surrogate: Phenol-d5	Dil out	Limit: 10-130	% Rec	10		06/11/21 0000	06/14/21 0000	
Surrogate: p-Terphenyl-d14	Dil out	Limit: 30-130	% Rec	10		06/11/21 0000	06/14/21 0000	
Surrogate: 2,4,6-Tribromophenol	Dil out	Limit: 15-130	% Rec	10		06/11/21 0000	06/14/21 0000	

Client Sample ID:	Hudson ST Wastewater Pump Station		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1F0954-02	**Collection Date:**	06/09/2021

Analyses Performed by: Microbac Laboratories, Inc. - Dayville

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 1664A			**Method Notes:** A34					
Oil & Grease	**17.6**	4.00	mg/L	1		06/14/21 1154	06/15/21 1528	HEP
EPA 335.4, Rv. 1 (1993)								
Cyanide - Total	<0.0100	0.0100	mg/L	1	**Q11**	06/14/21 1452	06/15/21 1043	CLW
EPA 420.1								
Phenols	**0.186**	0.0300	mg/L	1		06/14/21 0930	06/15/21 0931	CLW

Analyses Performed by: New England Testing Laboratory

Volatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 624.1								
2-Chloroethyl vinyl ether	Attached	20	ug/L	1			06/11/21 0000	SUB
1,1,1-Trichloroethane	Attached	1	ug/L	1			06/11/21 0000	SUB

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1F0954

Definitions

A34:	The entire bottle volume was not used. A reduced sample volume was used due to sample matrix.
D1:	The sample was diluted during sample preparation (extraction, distillation or digestion) due to matrix interference.
MCL:	US EPA Maximum Contaminant Level
mg/L:	Milligrams per Liter
Q11:	The recovery for the low level check standard was outside of the quality control range.
RL:	Reporting Limit
ug/L:	Micrograms per Liter

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville	
M-CT008	Massachusetts Department of Environmental Protection
New England Testing Laboratory	
PH-0740	Connecticut Department of Public Health
M-RI010	Massachusetts Department of Environmental Protection
Phoenix Environmental Labs	
PH-0618	Connecticut Department of Public Health
M-CT007	Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
Quality Assurance Officer
Reported: 06/30/2021 16:21

MICROBAC®

Microbac Labor
61 Louisa Vie
Dayville, CT

D1F0954

Northborough Water Department

page ____ of ____

lab WO #:

Project Manager:

Copy of Report To

CUSTOMER: TOWN of NORTHBOROUGH
ADDRESS: 63 MAIN ST
NORTHBOROUGH, MA 01532
DELIVERY:
E-MAIL: TDAVISON@TOWN.NORTHBOROUGH.MA.US
PHONE: 508-393-5033 FAX: 508-393-6996

BILL TO: WATER + SEWER DEPT
ADDRESS: SAME
ATTN: SCOTT CHARPENTIER
PHONE: 508-393-5030
E-MAIL:
PURCHASE ORDER #:

Project Information

Project: Hudson ST Sewer STN
Location: Hudson ST
Project Mgr: Steve JOBES
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL:
PHONE: 508-439-3109
FAX: 508-393-6996

Sample Identification	Date Collected	Time Collected	Sample Matrix	Sample Type: Composite	Sample Type: Grab	Bottle Qty	Analysis	Preservatives: NON-PRES	HCL	HNO_3	H_2SO_4	OTHER
Hudson ST pump STN	9 June 21		WW	✓		3		✓				
				✓		4		✓				
				✓		4		✓				
				✓		1					✓	
				✓		1				✓		
					✓	3					✓	
					✓	1						✓
					✓	2			✓			
					✓	2		✓				

PRESERVATIVE VERIFIED Initials KO.

CUSTODY TRANSFER	DATE	TIME
SAMPLER: Steve Jobes	9 June 2021	10:15
RECEIVED: Keith Mean	6-9-2021	12:53
RELINQUISHED: Keith Mean	6-9-2021	15:57
RECEIVED:	6-9-21	1557
RELINQUISHED:		
RECEIVED:		

TURNAROUND TIME REQUESTED (select): Standard | RUSH ____ Day

EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

Circle Delivery Method: E-MAIL | HARD COPY | OTHER

COMMENTS: ALL ANALYSES must CONFORM TO 40 CFR §136 for WASTE WATER

CONDITIONS UPON RECEIPT: (CHECK ONE)

COOLED ☒ | AMBIENT ☐ | 3.0 °C Upon receipt at lab

KO.

Bioassay Summaries

ENTHALPY ANALYTICAL

Leaders in Environmental Toxicology & Chemistry

July 16, 2021

Dennis L'Homme
City of Marlborough
Marlborough Westerly Wastewater Treatment Facility
303 Boundary Street
Marlborough, Massachusetts 01752

Enclosed, please find one (1) copy of our report evaluating results of toxicity tests completed on effluent samples collected from the Marlborough, Massachusetts Westerly Wastewater Treatment Facility during the June 2021 testing period. Acute and chronic toxicity was evaluated using the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*.

Please do not hesitate to call me should you have any questions regarding the report.

Sincerely,

Enthalpy Analytical, LLC

Meredith Wheeler
Project Manager

Enclosure
WET Test Report Certification
Report 35174-21-06
Email Only

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION

Permittee Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on: _____

_____
Authorized Signature

_____
Print or Type Name

City of Marlborough

_____
Print or Type the Permittee's Name

MA0100480

_____
Type or Print the NPDES Permit No.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on: July 16, 2021

Meredith Wheeler

Digitally signed by Meredith Wheeler
DN: cn=Meredith Wheeler, o=Enthalpy Analytical, ou=Project Manager, email=Meredith.Wheeler@Enthalpy.com, c=US
Date: 2021.07.16 12:24:12 -04'00'

Meredith Wheeler
NPDES Project Manager - Enthalpy Analytical, LLC

ENTHALPY
ANALYTICAL

TOXICOLOGICAL EVALUATION OF A TREATED MUNICIPAL EFFLUENT BIOMONITORING SUPPORT FOR A NPDES PERMIT: June 2021

Marlborough Westerly Wastewater Treatment Facility
Marlborough, Massachusetts
NPDES Permit Number MA0100480

Prepared For:

City of Marlborough
Marlborough Westerly Wastewater Treatment Facility
303 Boundary Street
Marlborough, Massachusetts 01752

Prepared By:

Enthalpy Analytical, LLC
One Lafayette Road
Hampton, New Hampshire 03842

June 2021
Reference Number: Marlborough-West35174-21-06

STUDY NUMBER 35174

EXECUTIVE SUMMARY

The following summarizes the results of modified acute and chronic exposure bioassays performed in June 2021 to fulfill the NPDES requirements of the Marlborough, Massachusetts Westerly Wastewater Treatment Facility. Acute and chronic toxicity was evaluated using the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*.

C. dubia, cultured at Enthalpy, were <24 hours old juveniles. *P. promelas*, supplied by a laboratory approved vendor, were <48 hours old at the start of the test. The receiving water collected from the Assabet River upstream of the discharge was used as a control only. Dilution water for both assays was Brentwood Springs Water, provided by an outside source. Samples were received under chain of custody in good order. All sample receipt, test conditions and control endpoints were within protocol specifications except where otherwise noted.

The results presented in this report relate only to the samples described on the chain(s) of custody and sample receipt log(s), and are to be used only by the submitter. Results from the chronic and modified acute exposure assays and their relationship to permit limits are summarized in the following matrix.

Acute Toxicity Evaluation

Species	Exposure	LC-50	A-NOEC	Permit Limit (LC-50)	Effluent Meets Permit Limit	Assay Meets Protocol Limits
Ceriodaphnia dubia	48 Hours	>100%	NC	≥100%	Yes	Yes
Pimephales promelas	48 Hours	>100%	NC	≥100%	Yes	Yes

Chronic Toxicity Evaluation

Species	Exposure	C-NOEC	IC-25	Permit Limit (C-NOEC)	Effluent Meets Permit Limit	Assay Meets Protocol Limits
Ceriodaphnia dubia	7 Days	100%	NC	≥40%	Yes	Yes
Pimephales promelas	7 Days	100% [a]	>100% [a]	≥40%	Yes [a]	Yes

COMMENTS:
NC = Not Calculated.
[a] The MSDp for minnow dry biomass was computed as 10%, which is below the lower limit of 12% specified by the method protocol. The lower MSDp would suggest that the assay data had very little variability and that the statistical analysis may be more likely to identify a "Significantly Different" response than if the assay had greater variability and a higher MSDp. Computation of the IC-25 for growth resulted in a value of >100% and all test acceptability criteria were met. The C-NOEC is 100% on the basis that this result determines that the test is more sensitive than required.

TOXICOLOGICAL EVALUATION
OF A TREATED MUNICIPAL EFFLUENT
BIOMONITORING SUPPORT FOR A NPDES PERMIT:
June 2021

Marlborough Westerly Wastewater Treatment Facility
Marlborough, Massachusetts
NPDES Permit Number MA0100480

1.0 INTRODUCTION

This report presents the results of toxicity tests completed on a series of composite effluent samples collected from the Marlborough, Massachusetts Westerly Wastewater Treatment Facility (Marlborough Westerly WWTF). Testing was based on programs and protocols developed by the US EPA (2002), with exceptions as noted by US EPA Region I (2011, 2013), and involved completing modified acute and chronic toxicity tests with the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*. Testing was performed at Enthalpy Analytical, LLC (Enthalpy), Hampton, New Hampshire in accordance with the provisions of TNI Standards (2009).

Acute toxicity tests involve preparing a series of test concentrations by diluting test samples with control water. Groups of test organisms are exposed to each test concentration and a control for a specified period. The mortality data for each concentration can be used to calculate the median lethal concentration or LC-50, defined as the concentration of effluent that kills half of the test organisms. Samples with a high LC-50 value are less likely to cause significant environmental impacts. These data can also be analyzed to determine the no effect level. This Acute No Observed Effect Concentration (A-NOEC) is defined as the highest tested effluent concentration that causes no significant mortality. Chronic toxicity tests measure sublethal effects, exposing test organisms to samples during a sensitive period in the life cycle. Minnow chronic tests measure survival and growth (weight) during the first seven days post hatch, and daphnid chronic tests measure survival and juvenile production. Using Analysis of Variance techniques to evaluate the data, it is possible to determine the lowest tested concentration that had an effect (C-LOEC) and the highest tested concentration where no effect (C-NOEC) was observed. An Inhibition Concentration (IC) may be calculated by linear interpolation to confirm the C-NOEC in situations where a non-standard dose-response or sample toxicity are encountered. The IC-25 is calculated to best approximate the C-NOEC (US EPA 2000).

2.0 MATERIALS AND METHODS

2.1 General Methods

Toxicological and analytical protocols used in this program follow procedures primarily designed to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms (US EPA 2002), and for the analysis of water samples (APHA 2012). See Section 4.0 for a list of references.

2.2 Test Species

C. dubia were maintained in laboratory water at 25±1˚C with a photoperiod of 16:8 hours light:dark. Cultures are fed daily with a yeast/trout chow/Cerophyll or alfalfa leaves (YTC) mixture supplemented with *Pseudokirchneriella subcapitata* (algae) (US EPA 2002). Adults on a brood board were isolated 24 hours prior to test start and allowed to reproduce for 8 hours.

When necessary, *P. promelas* were acclimated to approximate test conditions prior to use in the assay. Organisms were transferred to test chambers using an inverted glass pipet, minimizing the amount of water added to test solutions.

2.3 Effluent, Receiving Water, and Laboratory Water

Effluent and receiving water collection information is provided in Table 1. Samples were received at 0-6°C as per 40 CFR §136.3 unless otherwise noted, stored at 4±2°C and warmed to 25±1°C prior to preparing test solutions. Laboratory water was Brentwood Springs Water, provided by an outside supplier. This water has been used to successfully culture freshwater organisms.

Total residual chlorine (TRC) was measured by amperometric titration (MDL 0.02 mg/L) in the effluent samples prior to use in the assays. Samples with ≥0.02 mg/L TRC were dechlorinated using sodium thiosulfate (US EPA 2002) and a control treatment using laboratory water adjusted with the same amount of sodium thiosulfate used to dechlorinate the effluent was run concurrently with the assay. If sample pH measured <6.0 SU or >9.0 SU, samples were adjusted using sodium hydroxide or hydrochloric acid, respectively, and a control treatment using laboratory water adjusted with the same amount of either compound used to modify sample pH was run concurrently with the assay. When applicable, data from sodium thiosulfate and/or pH adjusted laboratory control treatments can be found in Appendix A.

2.4 Chronic Exposure Bioassays

The chronic toxicity tests were conducted according to protocol (US EPA 2002), which called for the daily renewal of test solutions. Test treatments for the assays were 100% (undiluted), 50%, 40%, 25%, 12.5% and 6.25% effluent. Dissolved oxygen, pH, temperature, and specific conductivity were measured in one replicate of each new test solution.

Test chambers for the daphnid assay were 30 mL portion cups containing approximately 20 mL of test solution in each of 10 replicates with 1 organism/replicate. Replicates were not randomized during testing; rather, organisms were added at test initiation by blocking by known parentage. Survival and juvenile production were monitored daily. Daphnids were each fed 200 µL of YCT supplemented with algae after daily renewals.

Test chambers for the fathead minnow assay were ≥500 mL beakers with 250 mL of solution in each of 4 replicates containing 10 organisms/replicate. Replicates were not randomized during testing; rather, organisms were added randomly at test initiation by replicate across test solutions in an alternating fashion (alternating allocation). Prior to daily minnow renewals, survival and dissolved oxygen were measured in all replicates, and pH, temperature and specific conductance were measured in one replicate of each concentration. Fish were fed newly hatched *Artemia* nauplii daily. Dead nauplii from previous feedings were removed during daily renewals. On Day 7 of the assay, surviving fish were tranquilized using Finquel® tricaine methanesulfonate and rinsed in deionized water. Fish were placed on tared weighing pans and dried overnight at 104±5°C to obtain dry weight to 0.01 mg. Final dry biomass/fish for statistical comparisons was calculated by dividing the net dry weight by the number of organisms introduced on Day 0.

2.5 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS™ v1.9.6.3, Comprehensive Environmental Toxicity Information System, software. The program computes acute and chronic exposure endpoints based on US EPA decision tree guidelines specified in individual test methods. If survival in the highest test concentration is >50%, the LC-50 is obtained by direct observation of the raw data. As needed, the A-NOEC is determined as the highest test concentration that caused no significant mortality. For chronic exposure endpoints statistical significance was accepted at $\alpha = 0.05$. For statistical calculations of *C. dubia* juvenile production, data from only the first three broods are used.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are completed on a regular basis for each test species. These results provide regular laboratory performance evaluation through the comparison of historic data sets. See Table 2 for details.

3.0 RESULTS AND DISCUSSION

Results of the chronic and modified acute exposure assays completed using *C. dubia* and *P. promelas* are presented in Tables 3 and 4, respectively. Effluent and dilution water characteristics are presented in Table 5. US EPA Region I Attachment F toxicity test summary sheets are provided after the tables. Support data, including copies of laboratory bench sheets, are provided in Appendix A.

3.1 Chronic Exposure Bioassay - *Ceriodaphnia dubia*

Minimum test acceptability criteria require 80% control survival, mean production of 15 juveniles/female, production of 3 broods by at least 60% of control females, and the MSDp for reproduction to be 13%-47% (US EPA 2002). Achievement of these results indicates that healthy test organisms were used and that the dilution water had no significant adverse impact on the outcome of the assay. See the Executive Summary and Table 3 for test acceptability.

3.2 Chronic Exposure Bioassay - *Pimephales promelas*

Minimum test acceptability criteria require 80% control survival, a mean dry weight of 0.25 mg/fish based on Day 7 survival, and the MSDp for biomass to be 12%-30% (US EPA 2002). Achievement of these results indicates that healthy test organisms were used and that the dilution water had no significant adverse impact on the outcome of the assay. See the Executive Summary and Table 4 for test acceptability.

4.0 LITERATURE CITED

40 CFR §136.3. Code of Federal Regulations (CFR), Protection of the Environment (Title 40), Guidelines Establishing Test Procedures for the Analysis of Pollutants (Part 136), Identification of Test Procedures (sub-part 3), Table II-Required Containers, Preservation Techniques, and Holding Times.

APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition. Washington D.C.

The NELAC Institute (TNI). 2009. *Environmental Laboratory Sector, Volume 1: Management and Technical Requirements for Laboratories Performing Environmental Analysis (TNI Standard)*. EL-V1-2009.

US EPA. 2000. *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*. EPA 821-B-00-004.

US EPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fifth Edition. EPA-821-R-02-012.

US EPA. 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth Edition. EPA-821-R-02-013.

US EPA Region I. 2011. *US EPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol*. US EPA Region I Office, Boston, Massachusetts. February 28, 2011.

US EPA Region I. 2013. *Freshwater Chronic Toxicity Test Procedure and Protocol - US EPA Region I*. US EPA Region I Office, Boston, Massachusetts. June 2013.

TABLE 1. Sample Collection Information.
Marlborough Westerly WWTF Effluent Evaluation. June 2021.

Sample Description	Type	Collection Date	Collection Time	Receipt Date	Receipt Time	Receipt Temp °C
EFFLUENT						
Start	Comp	06/06-07/21	0730-0730	06/07/21	1005	14 [a]
First Renewal	Comp	06/08-09/21	0730-0730	06/09/21	1000	21 [a]
Second Renewal	Comp	06/10-11/21	0730-0730	06/11/21	1000	10 [a]
RECEIVING WATER						
Start	Grab	06/07/21	0825	06/07/21	1005	14 [a]
First Renewal	Grab	06/09/21	0835	06/09/21	1000	21 [a]
Second Renewal	Grab	06/11/21	0825	06/11/21	1000	10 [a]

COMMENTS:
[a] Upon receipt, the temperature was outside of the range of 0-6°C per 40 CFR §136.3 for NPDES effluent samples and support chemistry samples. Samples were received with ice in the cooler, and were picked up and hand delivered by Enthalpy's courier the day sampling was completed.

TABLE 2. *C. dubia* Reference Toxicant Data.
Marlborough Westerly WWTF Effluent Evaluation. June 2021.

Date	Organism Lot	Endpoint	Value	Historic Mean/ Tendency	Acceptable Range	Reference Toxicant
C. dubia						
06/30/21	00CdEAH063021	Survival: LC-50	31.9	33.1	16.2 – 50.0	SDS (mg/L)
06/01/21	NA	Survival: C-NOEC	30	30	15 – 60	Copper (µg/L)
06/01/21	NA	Reproduction: C-NOEC	7.5	15	7.5 – 30	Copper (µg/L)
06/01/21	NA	Reproduction: MSDp	22.5	29.2	11.2 – 47.1	Copper (µg/L)
P. promelas						
06/30/21	06PpARO062821	Survival: LC-50	24.2	31.3	22.5 – 40.2	SDS (mg/L)
06/02/21	02PpABS060221	Survival: C-NOEC	10	10	5 – 20	SDS (mg/L)
06/02/21	02PpABS060221	Growth: C-NOEC	5	10	5 – 20	SDS (mg/L)
06/02/21	02PpABS060221	Growth: MSDp	31.4	26.4	1.2 – 51.5	SDS (mg/L)

Means and Acceptable Ranges based on the 20 most recent reference toxicant assays.

TABLE 3. *C. dubia* **Chronic and Modified Acute Exposure Assay Data Summary. Marlborough Westerly WWTF Effluent Evaluation. June 2021.**

Effluent Conc.	Mean Percent Survival Day 2	Mean Percent Survival Day 7	Mean Reproduction (Juv/Female)	% Females Producing 3 Broods	Is There a Significant Difference Based on Survival (%)	Is There a Significant Difference Based on Reproduction
LAB	100%	100%	36.7	90%	-	-
RW	100%	100%	29.7	80%	-	-
6.25%	100%	100%	34.2	100%	No	No
12.5%	100%	100%	33.3	100%	No	No
25%	90%	90%	31.2	100%	No	No
40%	100%	100%	35.5	100%	No	No
50%	100%	100%	30.6	90%	No	No
100%	100%	100%	31.1	100%	No	No
	LC-50 = >100%		MSDp = 22.7%		NOEC = 100%	NOEC = 100%

COMMENTS:
RW = Receiving Water; used as a control only. Laboratory water used as the diluent.

TABLE 4. *P. promelas* **Chronic and Modified Acute Exposure Assay Data Summary. Marlborough Westerly WWTF Effluent Evaluation. June 2021.**

Effluent Conc.	Mean Percent Survival Day 2	Mean Percent Survival Day 7	Mean Biomass (mg/fish)	Is There a Significant Difference Based on Survival (%)	Is There a Significant Difference Based on Growth (Biomass)
LAB	100%	97.5%	0.583	-	-
RW	100%	97.5%	0.571	-	-
6.25%	100%	100%	0.540	No	No
12.5%	100%	97.5%	0.557	No	No
25%	97.5%	95%	0.657	No	No
40%	100%	100%	0.636	No	No
50%	100%	100%	0.498	No	Yes [a]
100%	100%	100%	0.495	No	Yes [a]
	LC-50 = >100%		MSDp = 10.0% [a]	NOEC = 100%	NOEC = 100% [a]

TABLE 5. WET Support Chemistry Data.
Marlborough Westerly WWTF Effluent Evaluation. June 2021.

PARAMETER [a]	UNITS	EFFLUENT	RECEIVING WATER	LABORATORY WATER
Specific Conductivity	µmhos/cm	1527	720	370
pH	SU	7.48	7.60	8.30
Total Residual Chlorine	mg/L	<0.02	-	-
Alkalinity	mg/L	42	140	58
Hardness	mg/L	270	98	81
Total Solids	mg/L	900	-	-
Total Dissolved Solids	mg/L	810	-	-
Ammonia	mg/L as N	0.36	0.39	0.5
Total Organic Carbon	mg/L	4.9	5.9	0.70
Aluminum, total	mg/L	0.0086	0.11	0.0059
Cadmium, total	mg/L	0.00017	<0.0001	<0.0001
Copper, total	mg/L	0.011	0.0055	0.00036
Lead, total	mg/L	0.00023	0.00085	<0.0001
Nickel, total	mg/L	0.025	0.0016	<0.00063
Zinc, total	mg/L	0.016	0.028	0.0089

COMMENTS:
Additional water quality and analytical support data are provided in Appendix A.
[a] Analytical results provided by Absolute Resource Associates, Inc. of Portsmouth, New Hampshire. A full copy of their report is available upon request.

TOXICITY TEST SUMMARY SHEET

FACILITY NAME: Marlborough Westerly WWTF
NPDES PERMIT NO.: MA0100480
TEST START DATE: 06/08/21
TEST END DATE: 06/15/21

TEST TYPE
- ____ Acute
- ____ Chronic
- X Modified Chronic (Reporting Acute Values)
- ____ 24 Hour Screen

TEST SPECIES
- ____ *Pimephales promelas*
- X *Ceriodaphnia dubia*
- ____ *Daphnia pulex*
- ____ *Americamysis bahia*
- ____ *Cyprinodon variegatus*
- ____ *Menidia beryllina*
- ____ *Arbacia punctulata*

SAMPLE TYPE
- ____ Prechlorinated
- ____ Dechlorinated
- ____ Chlorine Spiked in Lab
- ____ Chlorinated on Site
- ____ Unchlorinated
- X No Detectable Chlorine Upon Receipt

SAMPLE METHOD
- ____ Grab
- X Composite
- ____ Flow-thru
- ____ Other

DILUTION WATER:
- ____ Receiving water collected at a point upstream or away from the discharge, free from toxicity or other sources of contamination; Receiving Water Name: Assabet River
- ____ Alternate surface water of known quality and hardness, to generally reflect the characteristics of the receiving water; Receiving Water Name:
- ____ Synthetic water prepared using either Millipore Milli-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water.
- ____ Artificial sea salts mixed with deionized water
- ____ Deionized water and hypersaline brine
- X Other: Brentwood Springs Water

EFFLUENT SAMPLING DATES: 06/06-07/21 06/08-09/21 06/10-11/21
EFFLUENT CONCENTRATIONS TESTED (%): 100, 50, 40, 25, 12.5, 6.25
Permit Limit Concentration: ≥40 %

Was the effluent salinity adjusted? No If yes, to what level? - ppt

REFERENCE TOXICANT TEST DATE: 06/30/21 LC-50: 31.9 mg/L Sodium Dodecyl Sulfate
06/01/21 NOEC: 7.5 µg/L Copper

PERMIT LIMITS AND TEST RESULTS
Test Acceptability Criteria

Mean Diluent Control Survival: 100 %
Mean # Juveniles/Female: 36.7
MSDp 22.7 %

TOXICITY TEST SUMMARY SHEET

FACILITY NAME: Marlborough Westerly WWTF
NPDES PERMIT NO.: MA0100480
TEST START DATE: 06/08/21
TEST END DATE: 06/15/21

TEST TYPE
- ___ Acute
- ___ Chronic
- X Modified Chronic (Reporting Acute Values)
- ___ 24 Hour Screen

TEST SPECIES
- X *Pimephales promelas*
- ___ *Ceriodaphnia dubia*
- ___ *Daphnia pulex*
- ___ *Americamysis bahia*
- ___ *Cyprinodon variegatus*
- ___ *Menidia beryllina*
- ___ *Arbacia punctulata*

SAMPLE TYPE
- ___ Prechlorinated
- ___ Dechlorinated
- ___ Chlorine Spiked in Lab
- ___ Chlorinated on Site
- ___ Unchlorinated
- X No Detectable Chlorine Upon Receipt

SAMPLE METHOD
- ___ Grab
- X Composite
- ___ Flow-thru
- ___ Other

DILUTION WATER:
- ___ Receiving water collected at a point upstream or away from the discharge, free from toxicity or other sources of contamination; Receiving Water Name: Assabet River
- ___ Alternate surface water of known quality and hardness, to generally reflect the characteristics of the receiving water; Receiving Water Name:
- ___ Synthetic water prepared using either Millipore Milli-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water.
- ___ Artificial sea salts mixed with deionized water
- ___ Deionized water and hypersaline brine
- X Other: Brentwood Springs Water

EFFLUENT SAMPLING DATES: 06/06-07/21 06/08-09/21 06/10-11/21
EFFLUENT CONCENTRATIONS TESTED (%): 100, 50, 40, 25, 12.5, 6.25
Permit Limit Concentration: ≥40 %

Was the effluent salinity adjusted? No If yes, to what level? - ppt

REFERENCE TOXICANT TEST DATE:
06/30/21 LC-50: 24.2 mg/L Sodium Dodecyl Sulfate
06/02/21 NOEC: 5 mg/L Sodium Dodecyl Sulfate

PERMIT LIMITS AND TEST RESULTS
Test Acceptability Criteria

Mean Diluent Control Survival: 97.5 %
Mean Dry Weight: 0.599 mg
MSDp 10.0 %

LIMITS RESULTS

DATA SHEETS

STATISTICAL SUPPORT

METHODS USED IN NPDES PERMIT BIOMONITORING TESTING

Parameter	Method
Acute Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-012 2002.0
Daphnia pulex	EPA-821-R-02-012 2021.0
Pimephales promelas	EPA-821-R-02-012 2000.0
Americamysis bahia	EPA-821-R-02-012 2007.0
Menidia beryllina	EPA-821-R-02-012 2006.0
Cyprinodon variegatus	EPA-821-R-02-012 2004.0
Chronic Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-013 1002.0
Pimephales promelas	EPA-821-R-02-013 1000.0
Cyprinodon variegatus	EPA-821-R-02-014 1004.0
Menidia beryllina	EPA-821-R-02-014 1006.0
Arbacia punctulata	EPA-821-R-02-014 1008.0
Champia parvula	EPA-821-R-02-014 1009.0
Wet Chemistries:	
Chlorine, Residual	Standard Methods 22nd Edition - Method 4500-Cl D
Specific Conductance	Standard Methods 22nd Edition - Method 2510 B
pH	Standard Methods 22nd Edition - Method 4500-H+ B
Dissolved Oxygen	Standard Methods 22nd Edition - Method 4500-O G

West Plant
Influent and Effluent Analysis

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1D2663

City of Marlborough

Alaina Davis
303 Boundary St.
Marlborough, MA 01752

Project Name: West Plant

Project / PO Number: 20210043
Received: 04/28/2021
Reported: 05/14/2021

Analytical Testing Parameters

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-01	**Collection Date:**	04/28/2021 7:45

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 625.1								
Acenaphthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Acenaphthylene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Azobenzene	<1.00	1.00	ug/L	1	Y1	05/03/21 1000	05/06/21 0346	GMP
Benzidine	<5.00	5.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[a]anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[a]pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[b]fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[g,h,i]perylene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[k]fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Bromophenyl phenyl ether	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Butyl benzyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Chloro-3-methylphenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Chloroethoxy)methane	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Chloroethyl) ether	<0.500	0.500	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Chloronaphthalene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Chlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Chlorophenyl phenylether	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Chrysene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Dibenz(a,h) anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Di-n-butyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
3,3-Dichlorobenzidine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dichlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Diethyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dimethylphenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Dimethyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dinitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dinitrotoluene (2,4-DNT)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,6-Dinitrotoluene (2,6-DNT)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Di-n-octyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Ethylhexyl)phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Fluorene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorobutadiene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorocyclopentadiene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-01	**Collection Date:**	04/28/2021 7:45

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Hexachloroethane	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Indeno(1,2,3-cd) pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Isophorone	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Methyl-4,6-dinitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Naphthalene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Nitrobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Nitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Nitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodimethylamine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodiphenylamine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodi-n-propylamine	<5.00	5.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,2'-Oxybis(1-Chloropropane)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Pentachlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Phenanthrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Phenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4,6-Trichlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2-Fluorobiphenyl	30.0	Limit: 5-114	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2-Fluorophenol	0.140	Limit: 12-67	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP
Surrogate: Nitrobenzene-d5	32.1	Limit: 15-314	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: Phenol-d6	0.220	Limit: 12-46	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP
Surrogate: p-Terphenyl-d14	41.2	Limit: 36-94	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2,4,6-Tribromophenol	0	Limit: 28-101	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-02	**Collection Date:**	04/28/2021 7:45

Pesticides and Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 608.3 GC-ECD								
Aldrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
alpha-BHC (alpha-Hexachlorocyclohexane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
beta-BHC (beta-Hexachlorocyclohexane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
delta-BHC [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
gamma-BHC (Lindane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Chlordane (tech.) [2C]	<0.200	0.200	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDD [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDE [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDT [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Dieldrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan I	**0.0109**	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan II [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan Sulfate [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endrin Aldehyde [2C]	<0.0200	0.0200	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Heptachlor [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Heptachlor epoxide [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Toxaphene [2C]	<1.00	1.00	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Aroclor-1016 (PCB-1016)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1221 (PCB-1221)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1232 (PCB-1232)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1242 (PCB-1242)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1248 (PCB-1248)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1254 (PCB-1254)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1260 (PCB-1260)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	72.4	Limit: 30-130	% Rec	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	59.9	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	60.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	60.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	64.2	Limit: 30-130	% Rec	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	53.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB

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CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-03	**Collection Date:**	04/28/2021 7:45

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
SM 2540 D-2011								
Total Suspended Solids (TSS)	<10.0	10.0	mg/L	4		04/29/21 2020	04/30/21 1658	TJT
SM 5210 B-2011								
Biochemical Oxygen Demand (BOD5)	<2.00	2.00	mg/L	1		04/28/21 1917	05/03/21 1319	AKS

Inorganics Dissolved	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 365.1, Rv. 2 (1993)								
Phosphorus - Total as P	**0.0616**	0.0106	mg/L	1		04/28/21 1900	04/29/21 1149	CLW

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-04	**Collection Date:**	04/28/2021 7:45

Metals Total by CVAA	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 245.2								
Mercury	<0.00020	0.00020	mg/L	1		04/29/21 1203	04/29/21 1359	MMC

Metals Total by ICP	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rv. 4.4 (1994)								
Aluminum	<0.0500	0.0500	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Antimony	<0.0150	0.0150	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Arsenic	<0.0050	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Beryllium	<0.0010	0.0010	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Cadmium	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Chromium	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Copper	**0.0151**	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Lead	<0.0030	0.0030	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Nickel	**0.0373**	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Selenium	<0.0100	0.0100	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Silver	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Thallium	<0.0050	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Zinc	**0.0180**	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-05	**Collection Date:**	04/28/2021 7:45

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 350.1, Rv. 2 (1993)								
Ammonia as N	**0.112**	0.0500	mg/L	1		04/30/21 1025	05/03/21 1652	CLW
EPA 365.1, Rv. 2 (1993)								
Phosphorus - Total as P	**0.0871**	0.0106	mg/L	1		04/28/21 1900	04/29/21 1140	CLW
Hach 8000								
Chemical Oxygen Demand (COD)	**21.8**	5.00	mg/L	1		05/03/21 1826	05/03/21 1829	DJM

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-06	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 335.4, Rv. 1 (1993)								
Cyanide - Total	<0.0100	0.0100	mg/L	1	**Q11**	04/30/21 1549	05/03/21 1316	CLW

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-07	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 1664A								
Oil & Grease	<2.11	2.11	mg/L	1		04/29/21 1055	04/30/21 1458	HEP

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-08	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 420.1								
Phenols	<0.0300	0.0300	mg/L	1		05/04/21 0853	05/04/21 1629	CLW

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CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-09	**Collection Date:**	04/28/2021 8:00

Volatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 624.1								
Acetone	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Acrolein	<20.0	20.0	ug/L	1			04/29/21 1902	JAN
Acrylonitrile	<20.0	20.0	ug/L	1			05/04/21 2146	RSD
Benzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromodichloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromoform	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromomethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Butanone (MEK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Carbon disulfide	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Carbon tetrachloride	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Chlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Chloroethane (Ethyl chloride)	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Chloroethyl vinyl ether	<20.0	20.0	ug/L	1			04/29/21 1902	JAN
Chloroform	<4.00	4.00	ug/L	1			05/04/21 2146	RSD
Chloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dibromochloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dibromomethane (Methylene bromide)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,2-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,3-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,4-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dichlorodifluoromethane (Freon-12)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,2-Dichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1-Dichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
cis-1,2-Dichloroethene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,1-Dichloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
trans-1,2-Dichloroethene	<4.00	4.00	ug/L	1			05/04/21 2146	RSD
1,2-Dichloropropane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
cis-1,3-Dichloropropene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
trans-1,3-Dichloropropene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Ethylbenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Hexanone (MBK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Methyl tert-butyl ether (MTBE)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1			05/04/21 2146	RSD
4-Methyl-2-pentanone (MIBK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Styrene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,1,2,2-Tetrachloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Tetrachloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Toluene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1,2-Trichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1,1-Trichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Trichloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Trichlorofluoromethane (Freon 11)	<5.00	5.00	ug/L	1			05/04/21 2146	RSD

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CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Influent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-09	**Collection Date:**	04/28/2021 8:00

Volatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Vinyl chloride	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
m,p-Xylene	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
o-Xylene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Vinyl acetate	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Surrogate: 1,2-Dichloroethane-d4	90.3	Limit: 70-130	% Rec	1			05/04/21 2146	RSD
Surrogate: 1,2-Dichloroethane-d4	97.5	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Toluene-d8	99.5	Limit: 70-130	% Rec	1			05/04/21 2146	RSD
Surrogate: Toluene-d8	104	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Pentafluorobenzene	94.5	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Pentafluorobenzene	101	Limit: 70-130	% Rec	1			05/04/21 2146	RSD

Definitions

MCL:	US EPA Maximum Contaminant Level
MDL:	Minimum Detection Limit
mg/L:	Milligrams per Liter
Q11:	The recovery for the low level check standard was outside of the quality control range.
RL:	Reporting Limit
S2:	Surrogate recovery is below acceptance limits.
ug/L:	Micrograms per Liter
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville

M-CT008 — Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/14/2021 17:06

MICROBAC®

Microbac Labora
61 Louisa Vier
Dayville, CT

D 1 D 2 6 6 3
Marlborough, City of

b WO #:
oject Manager:

Copy of Report To

CUSTOMER: City of marlborough
ADDRESS: 303 Boundary St.
marlborough ma 01752
DELIVERY: Dennis Chiammo
E-MAIL: dchiammo @ marlborough-ma.gov
PHONE: (508) 624-6919 ext 33619 FAX:

BILL TO: same
ADDRESS:
ATTN:
PHONE:
E-MAIL:
PURCHASE ORDER #: 20210043

Project Information

Project: IPP 2021
Location: West Plant
Project Mgr:
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL:
PHONE:
FAX:

Sample Identification	Date Collected	Time Collected	Sample Matrix	Sample Type: Composite	Sample Type: Grab	Bottle Qty	Analysis: 625	608	BOD, TSS	13ppm, Al	TP, COD, NH3-N, Soluble P	T. CN	FOG	T. Phenol	624	Preservatives: NON-PRES	HCL	HNO_3	H_2SO_4	OTHER
west Plant effluent	4/27-4/28/21	0745-0745	ww	X		4	X									✓				
				X		4		X								✓				
				X		1			X							✓				
				X		1				X								X		
				X		1					X								✓	
	4/28/21	0800			X	1						X								X
					X	2							X						X	
					X	2								X					✓	
					X	4									X					X

CUSTODY TRANSFER	DATE	TIME
SAMPLER: Alaura Davis	4/28/21	0827
RECEIVED: Tom Bozone	4/28/21	12:15
RELINQUISHED: Tom Bozone	4/28/21	16:35
RECEIVED:	4/28/21	16:55
RELINQUISHED:		
RECEIVED:		

TURNAROUND TIME REQUESTED (select): Standard RUSH ___ Day
PRESERVATIVE VERIFIED
EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

Circle Delivery Method: E-MAIL ~~HARD COPY~~ OTHER

COMMENTS: wastewater
pH:
geo:

CONDITIONS UPON RECEIPT: (CHECK ONE)
COOLED ☐ AMBIENT ☐ 3.1 1.5 °C Upon receipt at lab

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CERTIFICATE OF ANALYSIS

D1D2663

Revised Report: Amended to fix sample name.

City of Marlborough

Alaina Davis
303 Boundary St.
Marlborough, MA 01752

Project Name: West Plant

Project / PO Number: 20210043
Received: 04/28/2021
Reported: 05/17/2021

Analytical Testing Parameters

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-01	**Collection Date:**	04/28/2021 7:45

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 625.1								
Acenaphthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Acenaphthylene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Azobenzene	<1.00	1.00	ug/L	1	Y1	05/03/21 1000	05/06/21 0346	GMP
Benzidine	<5.00	5.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[a]anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[a]pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[b]fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[g,h,i]perylene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Benzo[k]fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Bromophenyl phenyl ether	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Butyl benzyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Chloro-3-methylphenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Chloroethoxy)methane	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Chloroethyl) ether	<0.500	0.500	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Chloronaphthalene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Chlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Chlorophenyl phenylether	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Chrysene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Dibenz(a,h) anthracene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Di-n-butyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
3,3-Dichlorobenzidine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dichlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Diethyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dimethylphenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Dimethyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dinitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4-Dinitrotoluene (2,4-DNT)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,6-Dinitrotoluene (2,6-DNT)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Di-n-octyl phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
bis(2-Ethylhexyl)phthalate	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Fluoranthene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Fluorene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorobutadiene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Hexachlorocyclopentadiene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-01	**Collection Date:**	04/28/2021 7:45

Semivolatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Hexachloroethane	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Indeno(1,2,3-cd) pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Isophorone	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Methyl-4,6-dinitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Naphthalene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Nitrobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2-Nitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
4-Nitrophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodimethylamine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodiphenylamine	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
n-Nitrosodi-n-propylamine	<5.00	5.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,2'-Oxybis(1-Chloropropane)	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Pentachlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Phenanthrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Phenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Pyrene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
2,4,6-Trichlorophenol	<1.00	1.00	ug/L	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2-Fluorobiphenyl	30.0	Limit: 5-114	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2-Fluorophenol	0.140	Limit: 12-67	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP
Surrogate: Nitrobenzene-d5	32.1	Limit: 15-314	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: Phenol-d6	0.220	Limit: 12-46	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP
Surrogate: p-Terphenyl-d14	41.2	Limit: 36-94	% Rec	1		05/03/21 1000	05/06/21 0346	GMP
Surrogate: 2,4,6-Tribromophenol	0	Limit: 28-101	% Rec	1	S2	05/03/21 1000	05/06/21 0346	GMP

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-02	**Collection Date:**	04/28/2021 7:45

Pesticides and Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 608.3 GC-ECD								
Aldrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
alpha-BHC (alpha-Hexachlorocyclohexane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
beta-BHC (beta-Hexachlorocyclohexane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
delta-BHC [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
gamma-BHC (Lindane) [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Chlordane (tech.) [2C]	<0.200	0.200	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDD [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDE [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
4,4'-DDT [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Dieldrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan I	**0.0109**	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan II [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endosulfan Sulfate [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endrin [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Endrin Aldehyde [2C]	<0.0200	0.0200	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Heptachlor [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Heptachlor epoxide [2C]	<0.00400	0.00400	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Toxaphene [2C]	<1.00	1.00	ug/L	1		04/29/21 1000	05/13/21 1602	MRB
Aroclor-1016 (PCB-1016)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1221 (PCB-1221)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1232 (PCB-1232)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1242 (PCB-1242)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1248 (PCB-1248)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1254 (PCB-1254)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Aroclor-1260 (PCB-1260)	<0.400	0.400	ug/L	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	72.4	Limit: 30-130	% Rec	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	59.9	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	60.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	60.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	64.2	Limit: 30-130	% Rec	1		04/29/21 1000	05/11/21 1753	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	53.8	Limit: 30-110	% Rec	1		04/29/21 1000	05/13/21 1602	MRB

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CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-03	**Collection Date:**	04/28/2021 7:45

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
SM 2540 D-2011								
Total Suspended Solids (TSS)	<10.0	10.0	mg/L	4		04/29/21 2020	04/30/21 1658	TJT
SM 5210 B-2011								
Biochemical Oxygen Demand (BOD5)	<2.00	2.00	mg/L	1		04/28/21 1917	05/03/21 1319	AKS

Inorganics Dissolved	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 365.1, Rv. 2 (1993)								
Phosphorus - Total as P	**0.0616**	0.0106	mg/L	1		04/28/21 1900	04/29/21 1149	CLW

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-04	**Collection Date:**	04/28/2021 7:45

Metals Total by CVAA	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 245.2								
Mercury	<0.00020	0.00020	mg/L	1		04/29/21 1203	04/29/21 1359	MMC

Metals Total by ICP	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rv. 4.4 (1994)								
Aluminum	<0.0500	0.0500	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Antimony	<0.0150	0.0150	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Arsenic	<0.0050	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Beryllium	<0.0010	0.0010	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Cadmium	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Chromium	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Copper	**0.0151**	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Lead	<0.0030	0.0030	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Nickel	**0.0373**	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Selenium	<0.0100	0.0100	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Silver	<0.0020	0.0020	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Thallium	<0.0050	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO
Zinc	**0.0180**	0.0050	mg/L	1		04/29/21 1349	04/30/21 1716	DLO

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-05	**Collection Date:**	04/28/2021 7:45

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 350.1, Rv. 2 (1993)								
Ammonia as N	**0.112**	0.0500	mg/L	1		04/30/21 1025	05/03/21 1652	CLW
EPA 365.1, Rv. 2 (1993)								
Phosphorus - Total as P	**0.0871**	0.0106	mg/L	1		04/28/21 1900	04/29/21 1140	CLW
Hach 8000								
Chemical Oxygen Demand (COD)	**21.8**	5.00	mg/L	1		05/03/21 1826	05/03/21 1829	DJM

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-06	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 335.4, Rv. 1 (1993)								
Cyanide - Total	<0.0100	0.0100	mg/L	1	**Q11**	04/30/21 1549	05/03/21 1316	CLW

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-07	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 1664A								
Oil & Grease	<2.11	2.11	mg/L	1		04/29/21 1055	04/30/21 1458	HEP

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-08	**Collection Date:**	04/28/2021 8:00

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 420.1								
Phenols	<0.0300	0.0300	mg/L	1		05/04/21 0853	05/04/21 1629	CLW

CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-09	**Collection Date:**	04/28/2021 8:00

Volatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 624.1								
Acetone	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Acrolein	<20.0	20.0	ug/L	1			04/29/21 1902	JAN
Acrylonitrile	<20.0	20.0	ug/L	1			05/04/21 2146	RSD
Benzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromodichloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromoform	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Bromomethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Butanone (MEK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Carbon disulfide	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Carbon tetrachloride	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Chlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Chloroethane (Ethyl chloride)	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Chloroethyl vinyl ether	<20.0	20.0	ug/L	1			04/29/21 1902	JAN
Chloroform	<4.00	4.00	ug/L	1			05/04/21 2146	RSD
Chloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dibromochloromethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dibromomethane (Methylene bromide)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,2-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,3-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,4-Dichlorobenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Dichlorodifluoromethane (Freon-12)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,2-Dichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1-Dichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
cis-1,2-Dichloroethene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,1-Dichloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
trans-1,2-Dichloroethene	<4.00	4.00	ug/L	1			05/04/21 2146	RSD
1,2-Dichloropropane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
cis-1,3-Dichloropropene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
trans-1,3-Dichloropropene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Ethylbenzene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
2-Hexanone (MBK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Methyl tert-butyl ether (MTBE)	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1			05/04/21 2146	RSD
4-Methyl-2-pentanone (MIBK)	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
Styrene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
1,1,2,2-Tetrachloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Tetrachloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Toluene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1,2-Trichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
1,1,1-Trichloroethane	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Trichloroethene	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
Trichlorofluoromethane (Freon 11)	<5.00	5.00	ug/L	1			05/04/21 2146	RSD

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CERTIFICATE OF ANALYSIS

D1D2663

Client Sample ID:	West Plant Effluent		
Sample Matrix:	Wastewater	**Collected By:**	Customer
Lab Sample ID:	D1D2663-09	**Collection Date:**	04/28/2021 8:00

Volatile Organic Compounds by GCMS	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Vinyl chloride	<5.00	5.00	ug/L	1			05/04/21 2146	RSD
m,p-Xylene	<10.0	10.0	ug/L	1	Y1		05/04/21 2146	RSD
o-Xylene	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Vinyl acetate	<5.00	5.00	ug/L	1	Y1		05/04/21 2146	RSD
Surrogate: 1,2-Dichloroethane-d4	90.3	Limit: 70-130	% Rec	1			05/04/21 2146	RSD
Surrogate: 1,2-Dichloroethane-d4	97.5	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Toluene-d8	99.5	Limit: 70-130	% Rec	1			05/04/21 2146	RSD
Surrogate: Toluene-d8	104	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Pentafluorobenzene	94.5	Limit: 70-130	% Rec	1			04/29/21 1902	JAN
Surrogate: Pentafluorobenzene	101	Limit: 70-130	% Rec	1			05/04/21 2146	RSD

Definitions

MCL:	US EPA Maximum Contaminant Level
MDL:	Minimum Detection Limit
mg/L:	Milligrams per Liter
Q11:	The recovery for the low level check standard was outside of the quality control range.
RL:	Reporting Limit
S2:	Surrogate recovery is below acceptance limits.
ug/L:	Micrograms per Liter
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville

M-CT008 — Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/17/2021 15:00

MICROBAC®

Microbac Labora[tories]
61 Louisa Vier[a]
Dayville, CT

D 1 D 2 6 6 3
Marlborough, City of

[La]b WO #:

[Pr]oject Manager:

Copy of Report To

CUSTOMER: City of marlborough
ADDRESS: 303 Boundary St.
marlborough ma 01752
DELIVERY: Dennis Ultamme
E-MAIL: dultamme @ marlborough-ma.gov
PHONE: (508) 624-6919 FAX: ext 33819

BILL TO: same
ADDRESS:
ATTN:
PHONE:
E-MAIL:
PURCHASE ORDER #: 20210043

Project Information

Project: IPP 2021
Location: west Plant
Project Mgr:
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL:
PHONE:
FAX:

Sample Identification	Date Collected	Time Collected	Sample Matrix	Sample Type: Composite	Sample Type: Grab	Bottle Qty	Analysis: LodS	LOCB	BOD, TSS	13ppm, Al	TOT P, (CO, NH3-N, Sulfide P)	T. CN	TOC	T. Phenol	Lod 4	Preservatives: NON-PRES	HCL	HNO_3	H_2SO_4	OTHER
west Plant effluent	4/27-4/28/21	0745-0745	ww	X		4	X									✓				
↓	↓	↓	↓	X		4		X								✓				
↓	↓	↓	↓	X		1			X							✓				
↓	↓	↓	↓	X		1				X								X		
↓	↓	↓	↓	X		1					X								X	
↓	4/28/21	0800	↓		X	1						X								X
↓	↓	↓	↓		X	2							X						X	
↓	↓	↓	↓		X	2								X					X	
↓	↓	↓	↓		X	4									X					X

CUSTODY TRANSFER	DATE	TIME
SAMPLER: Oleunadeuis	4/28/21	0827
RECEIVED: Tom Bozone	4/28/21	12:15
RELINQUISHED: Tom Bozone	4/28/21	16:35
RECEIVED:	4/28/21	16:55
RELINQUISHED:		
RECEIVED:		

TURNAROUND TIME REQUESTED (select): PRESERVATIVE VERIFIED RUSH ___ Day

EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

Circle Delivery Method: E-MAIL ~~HARD COPY~~ OTHER

COMMENTS: wastewater
pH:
gas:

CONDITIONS UPON RECEIPT: (CHECK ONE)
COOLED ☐ AMBIENT ☐ 3.1 1.5 °C Upon receipt at lab

West Plant
Sludge Analysis

MICROBAC

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1E1411

City of Marlborough

Dennis Lhomme
303 Boundary St.
Marlborough, MA 01752

Project Name: West Plant Sludge Cake

Project / PO Number: 20210043
Received: 05/13/2021
Reported: 05/20/2021

Analytical Testing Parameters

Client Sample ID:	West Plant Sludge	**Collected By:**	Customer
Sample Matrix:	Solid	**Collection Date:**	05/12/2021 12:00
Lab Sample ID:	D1E1411-01		

Inorganics Total	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
SM 2540 G-1997								
Percent Solids	2.90		% (by wt.)	1	Y1	05/18/21 1524	05/19/21 1442	SRF

Metals Total by CVAA	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 7471B								
Mercury	<1.14	1.14	mg/kg dry	1	Y1	05/19/21 1045	05/19/21 1156	MMC

Metals Total by ICP	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3050B/EPA 6010C								
Aluminum	2210	86.2	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Antimony	<5.17	5.17	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Arsenic	12.7	8.62	mg/kg dry	1	Q10,Y1	05/17/21 1449	05/19/21 1932	DLO
Beryllium	<1.72	1.72	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Cadmium	<3.45	3.45	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Chromium	164	3.45	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Copper	335	3.45	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Lead	12.5	5.17	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Molybdenum	41.0	3.45	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Nickel	112	8.62	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Selenium	<8.62	8.62	mg/kg dry	1	R3,Y1	05/17/21 1449	05/20/21 1404	DLO
Silver	<3.45	3.45	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO
Thallium	<8.62	8.62	mg/kg dry	1	Y1	05/17/21 1449	05/19/21 1932	DLO
Zinc	340	8.62	mg/kg dry	1	Y1	05/17/21 1449	05/18/21 2147	DLO

Definitions

% (by wt.):	Percent by Weight
Q10:	The recovery for the closing low level check standard was outside of the established quality control range. The initial low level check standard was within range.
R3:	Duplicate RPD is outside of acceptance criteria. The difference between the results is less than 2x Method Reporting Limit.
RL:	Reporting Limit
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville	Massachusetts Department of Environmental Protection
M-CT008	

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D1E1411

Report Comments

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Reviewed and Approved By:

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/20/2021 17:22

MICROBAC® 61 Louisa Viens Dr., Dayville, CT 062

D1E1411

CHAIN OF CUSTODY RECORD

Number

Instructions on back

TO BE COMPLETED BY MICROBAC

Temperature Upon Receipt (°C) 3.1 KG

Therm ID

Holding Time

Samples Received on Ice? Yes No N/A

Custody Seals Intact? Yes No N/A

Time (5 to 7 business days) notify lab) (needed by)

Report Type

[ ] Results Only [ ] Level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4 [ ] EDD

Lab Report Address

Client Name: City of Marlborough MA

Address: 303 Boundary Street

City, State, Zip: Marlborough MA 01752

Contact: Dennis L'Hamme

Telephone No.: 508-624-6919 Ext 33819

Marlborough, City of

City, State, Zip: SAME

Contact:

Telephone No.:

Send Report via: [ ] Mail [ ] Fax [X] e-mail (address)

Send Invoice via: [ ] Mail [ ] Fax [X] e-mail (address)

Project:

Location: Westerly WWTF

PO No.: 20210043

Compliance Monitoring? [ ] Yes [ ] No

( ) Agency/Program

Sampled by (PRINT): Dennis L'Hamme

Sampler Signature: Dennis L'Hamme

Sampler Phone No.: 508-624-6919 Ext 33819

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab (Comp)	Preservative Types **	% Solids	13 PPM	MO	AI								Additional Notes
	West Plant Sludge	05-12-2021	0630-1200	1	~~SW~~		C	✓	✓	✓	✓								
	(LIQUID)				S														
	(Wastewater Sludge)																		

Possible Hazard Identification [ ] Hazardous [ ] Non-Hazardous [ ] Radioactive

Sample Disposition [ ] Dispose as appropriate [ ] Return [ ] Archive

Comments: Please Report results on a dry weight basis.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Dennis L'Hamme	05-12-2021 1230	Keith Mean	5-13-2021 11:39
Keith Mean	5-13-2021 16:45		5-13-21 1645

Page 3 of 3

rev. 7/18/18

Page ____ of ____

Significant Industrial Users

Significant Industrial Users

Categorical Industries	Category
API Technologies 400 Nickerson Rd. Marlborough, MA 01752	Metal Finishing Point Source Category Subpart A-Metal Finishing Subcategory 40 CFR 433.15 Pretreatment Standards for new sources (PSNS)
Dav-Tech Plating, Inc. 40 Cedar Hill Street Marlborough, MA 01752	Metal Finishing Point Source Category Subpart A-Metal Finishing Subcategory 40 CFR 433.15 Pretreatment Standards for Existing Sources (PSES)
Diamond Machine Technology, Inc. 85 Hayes Memorial Drive Marlborough, MA 01752	Metal Finishing Point Source Category Subpart A-Metal Finishing Subcategory 40 CFR 413.15 Pretreatment Standards for New Sources (PSNS)
Ktron, Inc. 583 Berlin Rd. Marlborough, MA 01752	Subpart A-Metal Finishing Subcategory 40 CFR 433.15 Pretreatment Standards for Existing Sources (PSES)
Ruland Manufacturing Co,. Inc. 6 Hayes Memorial Drive Marlborough, MA 01752	Subpart A Metal Finishing Subcategory 40 CFR 433.17 Pretreatment Standards for New Sources (PSNS)

Non – Categorical Significant Industries: (40 CFR Part 403)

Gotham Ink Corp.
255 East Main Street
Marlborough, MA 01752

Ken's Foods, Inc.
1 D'Angelo Drive
Marlborough, Ma 01752

Massachusetts Water Resources Authority
84 D'Angelo Drive
Marlborough, MA 01752

Quest Diagnostics
200 Forest Street
Marlborough, MA 01752

Rohm & Haas Advanced Materials (Formally Dow Advanced Materials)
455 Forest St
Marlborough MA 01752

Saint-Gobain High Performance Materials, Inc.
9 Goddard Road
Northborough, MA 01752